

## Dr. Ernest A. H. Friedheim

## A Tribute on his Eightieth Birthday

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On October 17, 1899, was born in Zurich Ernst Friedheim, destined to become a pioneer in the field of chemotherapy. After an undistinguished school career he studied medicine in the Universities of Zurich, Geneva, Paris, Munich and Vienna, took his M.D. in Zurich in 1924, and diplomas of microbiology in the Pasteur Institute in Paris in 1926, and in tropical medicine and hygiene in Hamburg in 1928. He decided to pursue research rather than the practice of medicine and acquired for this purpose a wide basis in continued post-graduate studies: in pathology at the University of Geneva, in tissue culture, cell biology and micro-manipulation at the Max Planck Institute in Berlin, and spectroscopy at the Institut d'Optique in Paris (with a view to clarifying the alleged discovery of "mitogenic rays"). In 1930-31 we find him studying physical chemistry and cell biology at the Rockefeller Institute, New York, after which he was appointed Associate Professor in the Faculty of Medicine in Geneva. His consuming interest in the chemotherapy of parasitic diseases was motivated by the catastrophe in Cameroun in 1932, when 800 sleeping sickness patients were blinded by an over-dose of Atoxyl. He wrote: "I formed the project to prepare trypanocidal arsenicals which would penetrate in to the C.S.F. without involving the optic nerve or the parenchyma of the brain." These synthetic investigations were carried out largely in the kitchen—cleverly transformed into a small but sophisticated laboratory—at his home, 5, avenue Marc Monnier, Geneva, and the animal experiments at the University. Concurrently he completed the formal curriculum of chemistry and obtained a Ph.D. in chemistry in 1939. His thesis described a new class of trypanocidal arsenicals and their clinical evaluation, carried out in Nigeria under the patronage of Sir Henry Dale and under the auspices of the Colonial Office. I met him at his home then and was duly impressed. We had first met in London at a meeting of the Royal Society of Tropical Medicine and Hygiene on November 15, 1936, when Dr. Lyndhurst Duke read a paper on "Recent observations on the biology of trypanosomes in man in Africa". I had recently returned from the Belgian Congo (Zaire) where I and my colleagues had got rid of sleeping sickness in the area of 10,000 square miles allotted to us. But we wanted something safer and better than Tryparsamide. Friedheim took part in the discussion, but his remarks were not considered worth reproducing. But years after, when Dr. Ian Apter had reported on the success of Mel B (melarsoprol, Arsobal) in curing almost moribund cases of *T. rhodesiense*

sleeping sickness, Friedheim wrote me: "When I reported on my first sleeping sickness work at the meeting in London in 1936 you were the only one to take me seriously. I recall vividly the scene in the conference room where you talked to me and I want to tell you now that the confidence you gave me at that time helped me much in carrying on the research." We kept in close touch ever since and he has been a welcome guest in our house in London. He needed support and encouragement because, unable to find facilities for his research in academia and not prepared to submit to the discipline of industrial research, he stayed outside of the 'establishment', relying on his own unorthodox resources, and thus open to suspicion and criticism, at times tinged with xenophobia and professional jealousy. Some doubted—but never disapproved—the purity and uniformity of the batches of drugs he produced and hesitated to recommend trials. Fortunately, others took the view that it was immoral to refuse to give drugs of proved value for fear of an occasional fatality and thus condemn thousands of suffering and death. WHO took a cautious, negative attitude, but he was awarded generous facilities for drug trials in Mexico, Brazil, Chile, Argentina, Egypt and by Great Britain, France and Portugal in their African Territories, accepting his plea that "the mother is the best person to bring up her offspring". Indeed, this is the unique feature of Friedheim's activity. He is the only investigator to carry out himself, chemical design and synthesis, laboratory evaluation, clinical trials in the field, and the establishment of doses and practical treatment schedules. He wrote and published 130 papers on a succession of chemotherapeutic agents, active against trypanosomiasis, schistosomiasis, onchocerciasis, filariasis, syphilis and yaws and studied them in all parts of the world, and there is hardly a country which he has not visited. His latest achievement is a drug for chelation therapy of mercury and lead poisoning. His main contribution to medicine, to date unsurpassed by himself or others, remains Mel B (melarsoprol, Arsobal) which is the only drug effecting highly significant cure rates in all, including far advanced cases of *T. gambiense* and *T. rhodesiense* sleeping sickness. Its limitations are sporadic encephalopathies and increasing drug resistance. Subocaptate (Asiban) for the treatment of schistosomiasis has been bypassed by recent developments, but has still its uses. Mel W, an effective macrofilaricidal agent, is too hazardous for human but extensively applied in canine filariasis.

Considering the number of lives saved by

Friedheim drugs in Africa, many of his friends feel that he should be recommended for a major prize, which others have gained for much less merit. The University of Geneva gave him a prize of 5,000 francs "for his contribution to the relief of human suffering". Some 25 years ago he contracted, in Africa, a painful virus infection of one eye, which was nearly blinded, but he was heard to say jocularly that the damaged eye was still useful, with its pin-point vision, for looking down his microscope! He had many friends in Great Britain and he collaborated with all who, up to about 15 years ago, were working in Africa or the tropical schools at home. One such, Professor William Kershaw, wrote to me when supporting his election as an Honorary Fellow of the R.S.T.M. & H. in 1972 . . .

"He is a man of great erudition and an excellent linguist. Not only is he a first-rate pathologist,

biochemist, organic chemist and parasitologist, but he is an excellent diagnostic physician with, albeit heavily disguised, a passionate concern for his fellow men. He is also a musician of distinction with unusual knowledge and love for music".

From 1945 to 1969 he has had a sizeable fully equipped and staffed laboratory of his own in New York. Now he has been welcomed back as a guest professor and investigator at Rockefeller University, New York, in the laboratory of medicinal biochemistry of Professor A. Cerami. Friedheim describes his present activity as "a pleasant blend of my experience and the new ideas and techniques flourishing in Rockefeller University". He has remained to this day a passionate skier, hiker and swimmer but, to his sorrow, only a mediocre golfer.

But we hail him as one of the world's greatest benefactors.